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A Survey and Comparison of the Prevalence Pain and Hematuria and Irritative Symptoms in Patients with Double-J Catheter and Without Double-J Catheter after Trans-Urethral Lithotripsy

RASOUL HASHEMI JOZANI¹ and FATEMEH MASHAYEKHI^{2*}

¹Endourology Fellowship ,Iran University of Medical Sciences , Tehran , Iran.

²MSc Intensive and Critical Care Nursing,

Lecturer Faculty member of Jiroft University of Medical Sciences, Jiroft, Iran.

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ABSTRACT

TUL is a selected treatment for Urethral stones. Leaving the benefits of utilizing TUL, a series of small and large scale side effects might be caused in the patients. Some Urologists recommend putting Double-J catheter in the urethra after TUL in order to prevent Urethral stenosis and pains. This research studies and compares the prevalence of post TUL side effects in patients with Double-J catheter and those without catheter. this is a descriptive and cross-sectional research whose population includes all the patients with TUL resorting to Imam Khomeini Hospital of Jiroft in the first 6 months of 2015. The researchers have classified patients into two groups including those with Double-J catheter and those without the catheter. Those patients were then studied in terms of causing stimulatory side effects, pain hematuria. 151 patients with TUL were studied in terms of post-surgery side effects. Double-J catheter was used for 70% of the patients after TUL. In both groups of patients with and without catheter, more than 75% of the patients reported side effects such as pain, hematuria and stimulatory symptoms, but no significant relationship was observed between the patients in terms of causing symptoms ($p>0.005$). although no significant relationship was observed in patients with double-j catheter and those without the catheter in terms of side effects, high number of complaints about post TUL side effects may lead us to the conclusion that using double-j catheter can cause only excessive costs for the patients. Of course, it is recommended to conduct this study in a larger society.

Key words: urethral stone, trans-Lithotripsy, double-j catheter.

INTRODUCTION

Urolithiasis is the most important problem of the urinary tract. According to the reference books of Urology and other various studies, urolithiasis afflict around 2 to 3 percent of the whole population of the world^{1, 2}. The common age for this illness is the third and fourth decade of life and the prevalence of this symptom in men is 3 to 5 times more than the frequency observed in women. Five years after treatment, 50% of the patients will experience the recurrence of urolithiasis. If the patient is suffering from urethral stones, the operation will be particularly more sensitive and

due to the short diameter of the ureter, ureteral stenosis is quite possible after open surgery³. Before 1975, surgery was the only method to treat Urolithiasis. The patient was hospitalized for a week and he had to pay high prices of operation and hospitalization. The patient underwent surgery under Anesthesia and all the side effects of a painful surgery and a big scar were left on his body. One month after the operation, the patient was not able to get back to his work yet and if any cases of Urolithiasis occurred again, the conditions would be much worse⁴. Technological and scientific achievements and progresses over the last 2 decades have caused great changes in the

medicine and treatment of various illnesses. Advanced technologies today help us diagnose diseases much faster and more accurately and non-invasive treatment methods have replaced invasive methods in many cases. Percutaneous Nephro Lithotomy (PCNL) was introduced in 1976 which had some advantages compared to open surgery method, but it was still invasive⁵. Ureteroscopy was introduced by the German doctor Castro in 1980. The early form of ureteroscopy was thick and bulky and had various side effects such as piercing the urether and causing urethral stenosis⁶. Modern ureteroscopes are flexible and result in less side effects and using them makes it possible to study various pathologies even in renal pelvis⁵. Invention of stone crushers was a revolution in treatment of kidney stones all around the world. Non-invasive methods are popular with both doctors and patients. One of the most common places for the stones to stop is distal ureter. This will result in renal colic and ureterohydronephrosis⁷. If medical treatments fail, extracorporeal shock wave lithotripsy (ESWL) and transurethral lithotripsy (TUL) methods will be utilized⁷. TUL is a selective method for treating middle and lower ureter stones, however it is sometimes used to treat upper ureter and renal stones^{1,8}. Besides the benefits of using TUL, a series of large and small scale side effects may be caused in the patients ranging from a slight hip pain and temporary hematuria to ureter piercing and infection. Some urologists recommend putting a double-j catheter inside the ureter after TUL in order to prevent ureteral stenosis and pains⁹. Double-j stents are used to treat ureteral stones and big renal stones in order to be assured of drainage and performance of kidneys during the treatment. Although utilizing them poses no danger, but early symptoms such as pain, irritative symptoms, hematuria, infection and even urosepsis have been reported¹⁰. Delayed side effects such as stent migration, calcification, and forming fistula between ureter and iliac artery have been reported¹¹. Various researches have reported the above mentioned side effects about 3 to 4 weeks after TUL among 15% of the patients, while 75% of the cases were reported 3 months after TUL¹². As urologists use double-j catheter frequently, the present research was conducted in order to study post TUL side effects in patients with and without double-j catheter. It was sought to see which group

(patients with or without catheter) exhibits more side effects and if using double-j catheter is necessary for all patients afflicted with TUL.

METHODOLOGY

This is a descriptive and cross-sectional study conducted with the goal of investigating and comparing the prevalence of pain and hematuria and irritative symptoms in patients with and without double-j catheter after trans-urethral Lithotripsy. The population included all the patients afflicted with TUL who had resorted to Imam Khomeini Hospital of Jiroft in the first 6 months of 2015. After gaining permission from the authorities, the researcher went to the urology ward of the hospital where patients with ureteral stone who had undergone TUL were kept. The patients with and without double-j catheter were studied in terms of irritative side effects of bladder, pain and hematuria. As the patients resort to doctor 4 days, one week and 10 days after TUL for checking, thus all of them were diagnosed in terms of the irritative symptoms of bladder and pain and hematuria.

Properties of collection tool:

A check list containing the demographic information of the patients and location of stone, stone size, having or not having double-j catheter, the type of symptom caused by double-j catheter, and how long it has taken for the side effects to show themselves after catheter was prepared.

Research sample

The population included all the patients with TUL in the first 6 months of 2015.

Data analysis method

The last version of SPSS was used to analyze data. Descriptive statistics in the form of frequency tables and indicators such as mean and standard deviation were utilized to describe the demographic properties and the side effects caused by the catheter. T, anova and chi square tests were utilized to show the relationship between demographic variables and causing side effects and the type of side effect. The significant level for all the tests was set at 0.05.

Ethical considerations: confidentiality of information was emphasized and the patients were assured that the results would be utilized only for research. The participants were never forced to participate in the research and people were free to take part in the research.

RESULTS

In this research, all the patients with Urolithiasis who had resorted to Imam Khomeini Hospital of Jiroft in the first 6 months of 2015 and who had undergone TUL were studied. Of the total number of 187 patients having undergone TUL, 151 took part in the research and 36 decided not to take part.

The average age of those participating in the research was 38.18 with a standard deviation of 13.93. The oldest and youngest participants were 77 and 16 years old respectively. 55% of the participants were male and the remaining 45% were

female. All the demographic information of the patients are represented in table 1.

Of the whole 151 patients undergoing TUL, double-j catheter was utilized for 114 patients and, while 37 had not used double-j catheter. Of the 114 patients with double-j catheter, 80 cases (70.2%) of post surgery complaints such as pain, hematuria and irritative symptoms were reported, while 34 patients (29.8%) had no side effects. Of those 37 patients undergoing TUL without double-j catheter, 27 people (73%) were complaining of post surgery symptoms such as pain, hematuria and irritative symptoms, while 10 people (27%) had no complaints. Table 2 represents the frequency and percentage of side effect type in both groups.

In order to determine the relationship between demographic variables (age, gender, marital status, occupation, education level and place of residence) and side effects such as pain, hematuria, and irritative symptoms in patients

Table 1: Demographic variables of the patients

Patient's information		Frequency	Percentage	Mean and standard deviation
age				38.18 ±13.93
gender	female	68	45	
	male	83	55	
marital status	single	25	16.6	
	married	110	72.8	
	widow	16	10.6	
job	unemployed	56	37.1	
	governmental job	55	36.4	
	self employed	31	20.5	
	retired	9	6	
education	illiterate	14	9.3	
	junior highschool	36	23.8	
	highschool	60	39.7	
	university	41	27.2	
place of residence	city	92	60.9	
	town	59	39.1	
previous experience of TUL	yes	29	19.2	
	no	122	80.8	
having double-j catheter	yes	114	75.5	
	no	37	24.5	
total number	151	100		

undergoing TUL, T, ANOVA and Chi square statistical tests were used. The results showed no significant statistical relationships between demographic variables and prevalence of symptoms and their type ($P>0.005$).

Fisher's precise test has shown no relationship between existence or absence of side effects and having double-j catheter. This test also helped us understand there is no relationship between pain, hematuria, and irritative symptoms and having or not having double-j catheter ($P>0.005$).

The results of chi square test showed that in the single sample mode in both groups of patients with and without double-j catheter, there is a significant difference between those with hematuria and those not having hematuria ($P=0.001$).

The results also showed a significant difference between patients with and without double-j catheter in terms of their reaction to irritative symptoms ($p=0.001$). Table 3 shows the level of significance.

DISCUSSION

In this research, 151 patients with ureter

stones who had undergone Lithotripsy operation were studied in terms of using double-j catheter after surgery and existence of side effect such as pain, hematuria, and irritative symptoms. Double-j catheter was used for more than 75 percent of patients undergoing Lithotripsy. In both groups of those with and without double-j catheter, more than 70 percent of the cases reported side effects such as pain, hematuria and irritative symptoms which shows the prevalence and existence of side effects in both groups. In a research titled using double-j catheter after TUL in patients with the ureteral stones, Memini et al. showed that no significant difference was observed between patients with and without double-j catheter in terms of stone residue, ureteral stenosis, hydronephrosis and other side effects. This was in line with our results. They believe using double-j catheter in patients without side effects is unnecessary and using double-j catheter will merely result in additional costs and irritative symptoms for the catheter (13).

Ahla et al. (2010) studied the patients undergoing TUL who were suffering from the side effects of using double-j catheter in Turkey. Due to the side effects caused by double-j catheter in patients after TUL, it was concluded that special instructions and management strategies are required¹⁴.

Table 2: Frequency and percentage of side effects after TUL

Patient undergoing TUL		With double-j catheter		Without double-j catheter	
		Frequency	Percentage	Frequency	Percentage
side effect type	pain	21	18.4	13	35.2
	hematuria	29	25.4	6	16.2
	irritative symptoms	30	26.4	8	21.6
no side effects	34	29.8	10	27	
total number	114	100	37	100	

Table 3: The relationship between the type of side effect and presence or absence of double-j catheter

patients with double-j catheter		Patients without double-j catheter	
Type of side effect	P	Type of side effect	P
pain	$P<0.001$	pain	$P=0.139$
hematuria	$P<0.001$	hematuria	$P<0.001$
irritative symptoms	$P<0.001$	irritative symptoms	$P<0.001$

In a case study conducted in India in 2012 by Kelkar et al. (2012) titled "Double-j stent management", cases of forgetting the stent were reported. Thus doctors need to take the appropriate action to manage the double-j stent in patients after they have been utilized and register the exact date of stent implantation¹⁵. In a study conducted by Etemadian et al. (2013), in one of the hospitals of Tehran, it was reported that a forgotten double-j stent body was automatically disposed of. Various problems about ureteral stents have been reported the most common of which is forgetting the stent¹⁶.

In our study, a significant relationship was observed between patients with and without double-j catheter in terms of the side effects. A significant relationship was observed in the group of patients undergoing TUL with double-j catheter in terms of the presence of side effects. The study conducted by Rabani et al. (2012) in a governmental hospital in Iran in order to study post stone crushing side effects in two groups of patients undergoing TUL and ESWL, no significant relationship was observed between the two groups in terms of causing symptoms of pain, fever and hematuria. They also reported that one of the

patients undergoing TUL with double-j catheter had problems such as rupture of the lining of uterus and piercing of uterus⁷.

Although no significant relationship was observed between patients with and without double-j catheter in terms of presence of side effects such as pain, hematuria and irritative symptoms, the fact that 70% of the patients were complaining about post TUL side effects may get us to the conclusion that using double-j catheter can cause only excessive costs for the patients. It is recommended that larger populations of patients undergoing TUL and more side effects be studied.

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